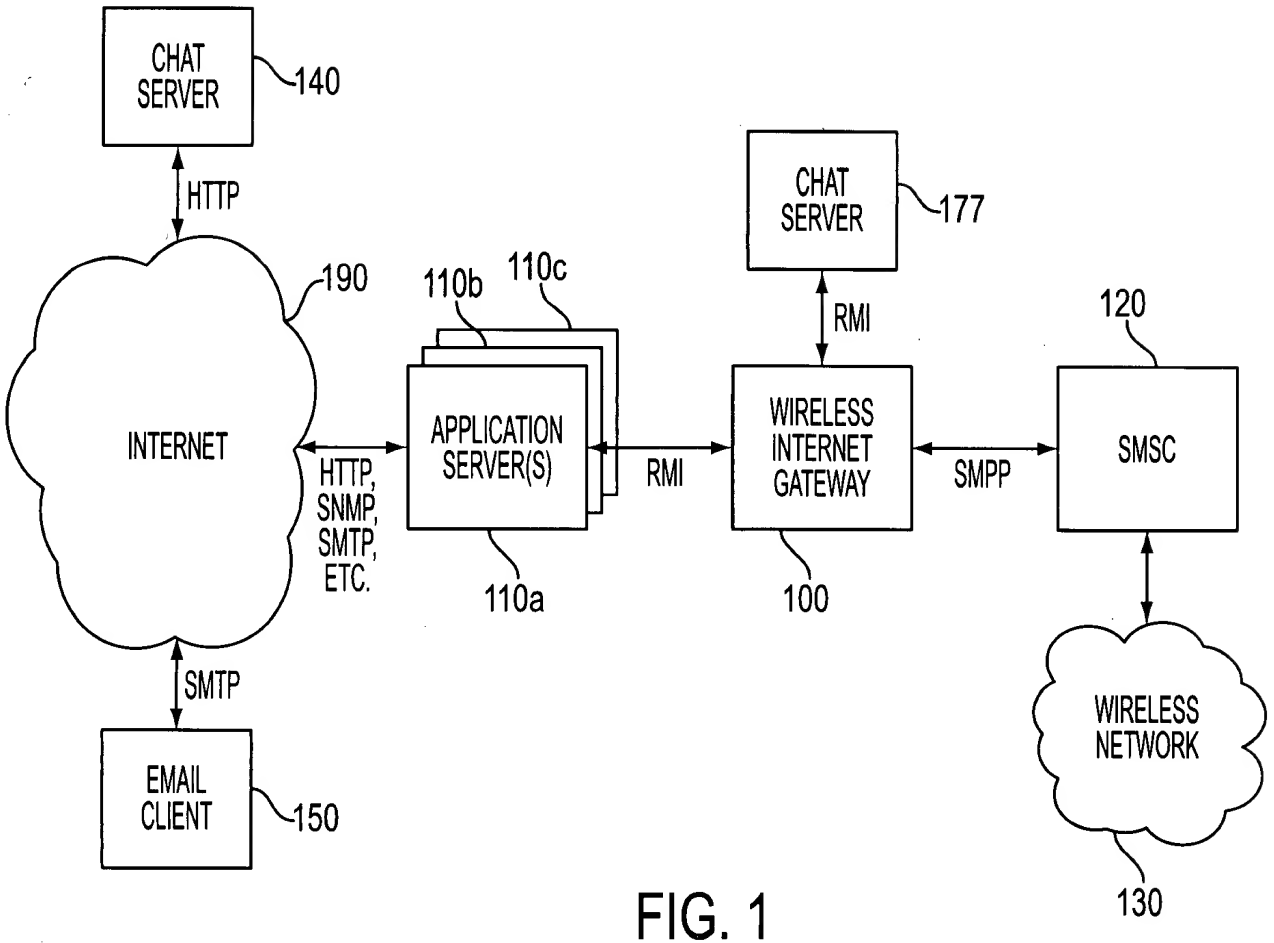
CHAT SERVER
140
HTTP
190
INTERNET
HTTP, SNMP, SMTP, ETC.
110b
110c
APPLICATION SERVER(S)
110a
RMI
CHAT SERVER
177
RMI
WIRELESS INTERNET GATEWAY
100
SMPP
120
SMSC
WIRELESS NETWORK
130
SMTP
EMAIL CLIENT
150

FIG. 1

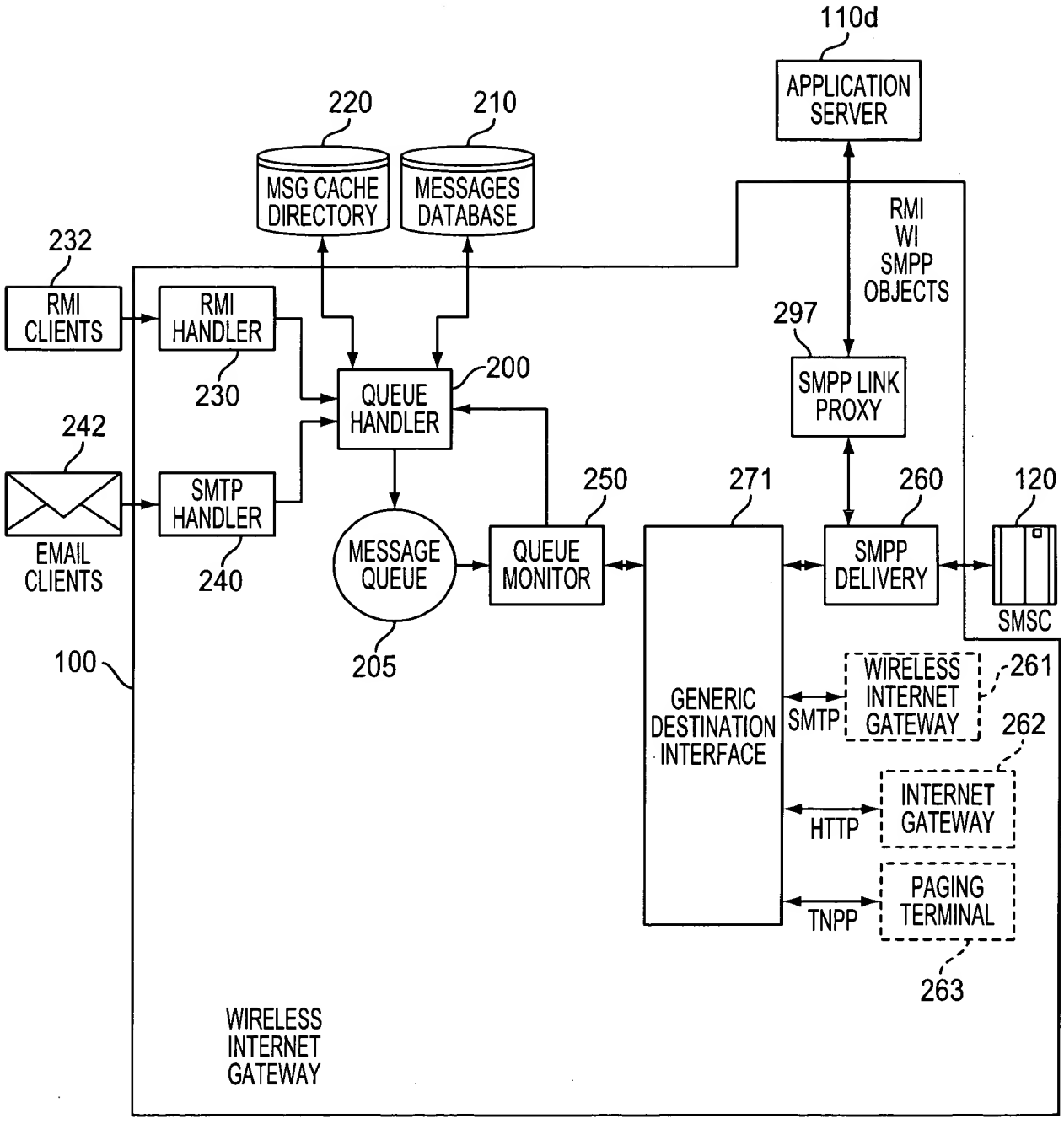
110d
APPLICATION SERVER
220
210
MSG CACHE DIRECTORY
MESSAGES DATABASE
RMI WI SMPP OBJECTS
232
RMI CLIENTS
RMI HANDLER
230
297
SMPP LINK PROXY
200
QUEUE HANDLER
242
EMAIL CLIENTS
SMTP HANDLER
240
MESSAGE QUEUE
205
250
QUEUE MONITOR
271
GENERIC DESTINATION INTERFACE
260
SMPP DELIVERY
120
SMSC
100
WIRELESS INTERNET GATEWAY
SMTP
261
WIRELESS INTERNET GATEWAY
262
HTTP
INTERNET GATEWAY
TNPP
PAGING TERMINAL
263
WIRELESS INTERNET GATEWAY

FIG. 2

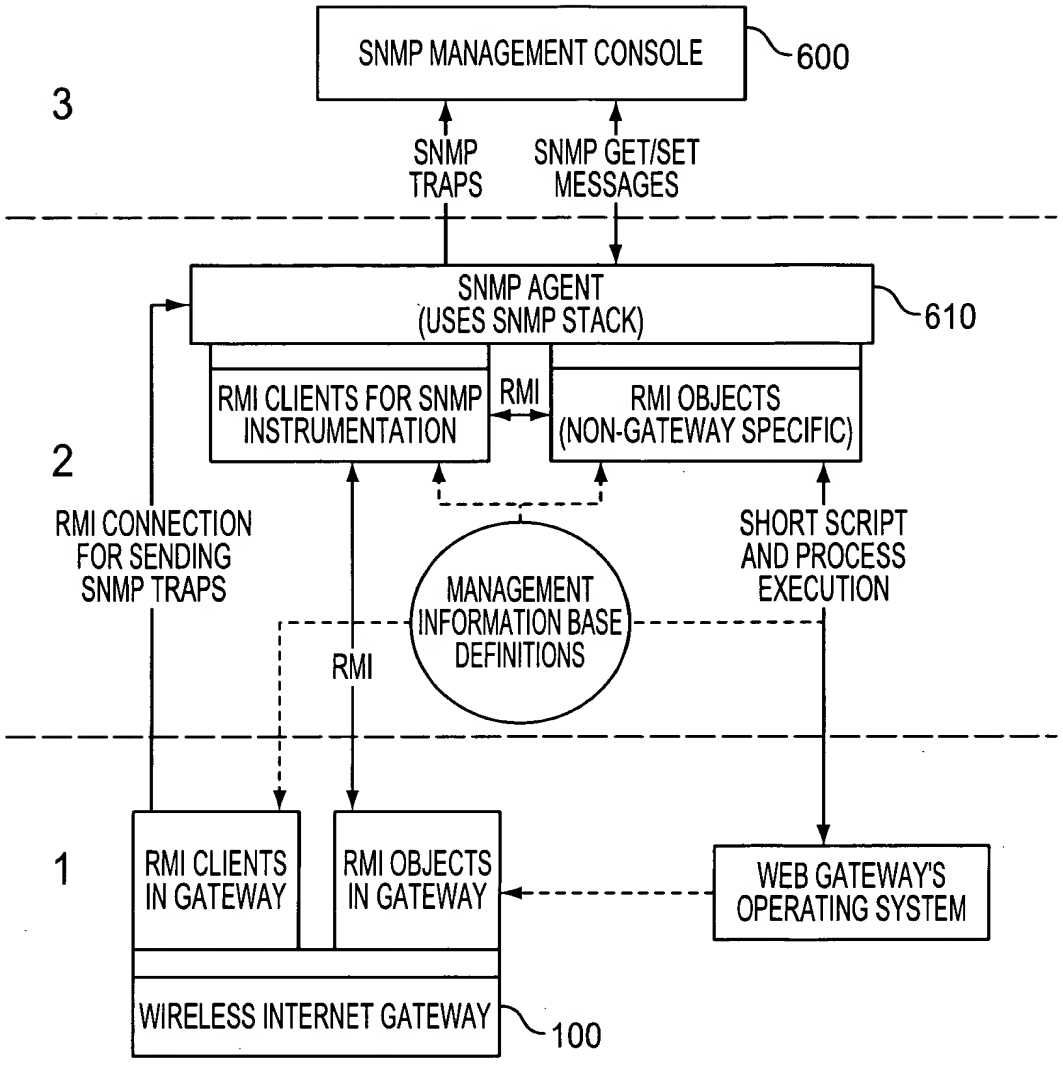
SNMP MANAGEMENT CONSOLE
600
3
SNMP TRAPS
SNMP GET/SET MESSAGES
SNMP AGENT (USES SNMP STACK)
610
RMI CLIENTS FOR SNMP INSTRUMENTATION
RMI
RMI OBJECTS (NON-GATEWAY SPECIFIC)
2
RMI CONNECTION FOR SENDING SNMP TRAPS
SHORT SCRIPT AND PROCESS EXECUTION
MANAGEMENT INFORMATION BASE DEFINITIONS
RMI
1
RMI CLIENTS IN GATEWAY
RMI OBJECTS IN GATEWAY
WEB GATEWAY'S OPERATING SYSTEM
WIRELESS INTERNET GATEWAY
100

FIG. 3

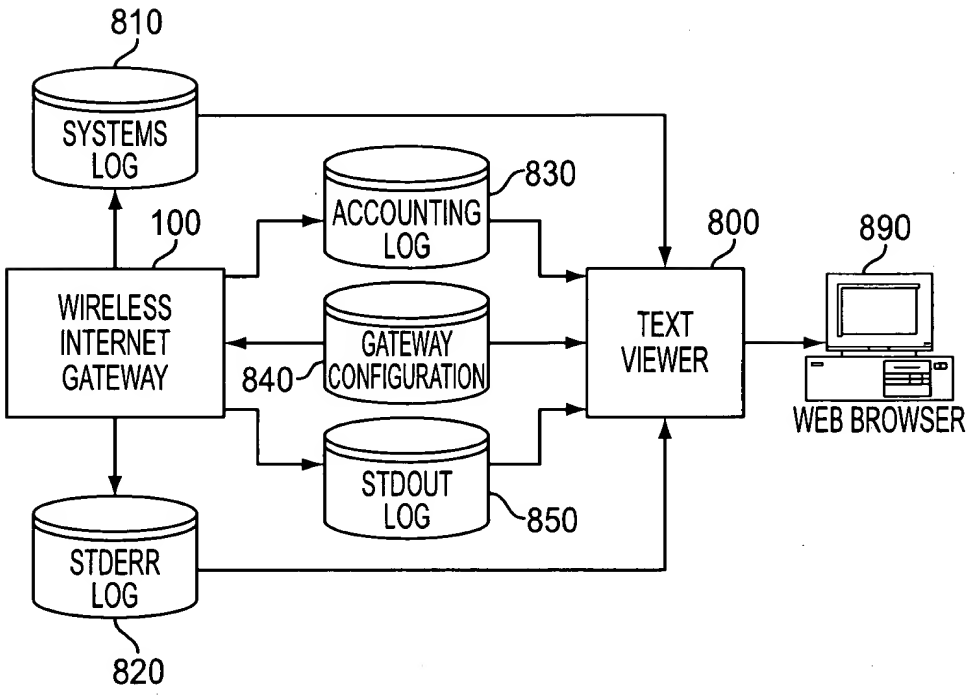
810
SYSTEMS LOG
100
WIRELESS INTERNET GATEWAY
ACCOUNTING LOG
830
GATEWAY CONFIGURATION
840
STDOUT LOG
850
STDERR LOG
820
800
TEXT VIEWER
890
WEB BROWSER

FIG. 4

```
# ------------------------------------------------------
#       smscgw.conf:    Configuration File for TCS SMS Web Gateway
#                       (c) 1998,1999,2000 TCS, Inc.
# ------------------------------------------------------
# ---------- Identification  ---------------------------------
GW_ID                   A                       # Msg Identifier for GW
GWName                  admin@demosys.com       # Email address for gw msgs
Shutdown_MIN            0000000009              # MIN to shutdown gateway

# ----------. System Output  ---------------------------------
basedir                 ./                      # base location of files
accountinglogfile       logs/acc.log            # account log file name
systemlogfile           logs/system.log         # system log file name
accountingloglevel      9                       # Level of accounting log detail
systemloglevel          9                       # Level of system log detail
debugmode               yes                     # Sends SMPP info to StdOut
do_email_debug          yes                     # Show SMTP Interactions


smtpSocketTimeout           10                  # Time socket waits for input
                                                #   before it times out
smtpSocketLinger            10                  # Time OS keeps socket alive
                                                #   after application closes socket
smtpListenerSleepInterval   50                  # Time (milliseconds) to pause
                                                #   between successive SMTP connections
                                                #   50 milliseconds implies 200
                                                #   connections per second



# ----------- Database References  -----------------------------
MessageStoreType        DB                      # File System (FS) or Database
                                                # (DB) storage or None or DB Cache (DBC)

# Connection information for accessing the Message Store
MessageStoreDbClass       oracle.jdbc.driver.OracleDriver
MessageStoreDbUrl         jdbc:oracle:thin:@dbhost.demosys.com:1521:ORCL
MessageStoreDbAccount     webdb
MessageStoreDbPw          private

msgLifespanHours        8                       # How long to retain message data
requeueIntervalSecs     60                      # How often to requeue unack'd msgs

q_cachepath             ./cache/                # directory for unack'd msg indicators
q_msgpath               ./messages/             # directory for FS database files
PendingCacheThreshold   50
PollPendingCache  10

# ----------- Features ----------------------------------------
enable_smtp             yes                     # Enable Email Support
smtp_port               25                      # Port for receiving email
enable_web              yes                     # Enable RMI for Web (and other RMI clients)
enable_smpp             yes                     # Enable SMPP output to SMSCs (reqd)
enable_calendar         no                      # Enable Web Calendar support
```

TABLE 1

```
enable_monitor          yes                 # Enable free memory monitor
memoryCheckRestTime     180000              # ms time for checking avbl memory
memoryThreshold         256                 # xb threshold for generating alert

msg_maxlen              90                  # Max length in a single message
msg_link_maxlen         150                 # Max total length of msg through linking

enable_antispam         yes                 # Enable msg qty limitations
SpamMaxSendQty          100                 # Max no. msgs that can be sent per period
SpamMaxRecvQty          100                 # Max no. msgs that can be recvd per period
SpamTimePeriod          1                   # Time period, in hours
SpamInValidSenders      987.654.321.000     # Senders that are always refused
SpamValidSenders        admin@demosys.com   # Sender exempt from anti-spam checks
SpamValidReceivers      9876543210,1234567890  # Receivers exempt from anti-spam checks

forceSNReturnReceipt    no                  # Always request return receipt from SMSC

AlwaysDoEmailReceipt    no                  # Always send a receipt to E-mail senders
AlwaysDoEmailReceipt_Exclude demosys.com    # Senders to exclude if above is enabled

validateScheme                  0           # 0=RANGE, 1=LOOSE, 2=EXPLICIT

supportAltAddressing    yes                 # PIN/Alias lookups allowed
minLength               10                  # Length of a valid MIN
PinLength               6                   # Length of a valid PIN.
PinPrefix               P.                  # Prefix to identify PINs

supportSubmitTranslate    no                # Do User vs Submit Address (DN/MIN) xlation

heartbeatsecs           180                 # seconds between heartbeats; 0 = no
heartbeat

# --------- Message Destinations------------------------------
sn_count                1                   # Number of SMSCs attached

sn_type0                        tcs.ain.smsgw.SmsGwSNSMPPLink

serializeSmppTraffic yes

smpp_host0              localhost           # Host name of first SMSC
smpp_TXport0            7001                # SMPP Tx port for first SMSC
smpp_RXport0            7002                # SMPP Rx port for first SMSC
smpp_bind_password0     secret              # SMSC/SMPP Password
smpp_bind_sysID0        EE                  # SMSC/SMPP System ID
smpp_bind_sysType0      INET_GW             # SMPP Client identifier
smpp_valid_min_range0   3102800000  5102802000  0000000009  0000000009
smpp_template0          1                   # SMSC Template for sending messages
smpp_callback_trigger0   SA                 # Trigger for embedding callback number
smpp_message_trigger0    SM                 # Trigger for identifying message text
smpp_service_type0      PAGE                # Service Type; Comment out for Aldiscon
smpp_src_addr_ton0      0                   # Type of Number; TCS=0
smpp_src_addr_npi0      0                   # Numbering Plan Indentity; TCS=0
smpp_dst_addr_ton0      1
smpp_dst_addr_npi0      1
```

TABLE 1

-SAMPLE GATEWAY CONFIGURATION FILE (CON'T)

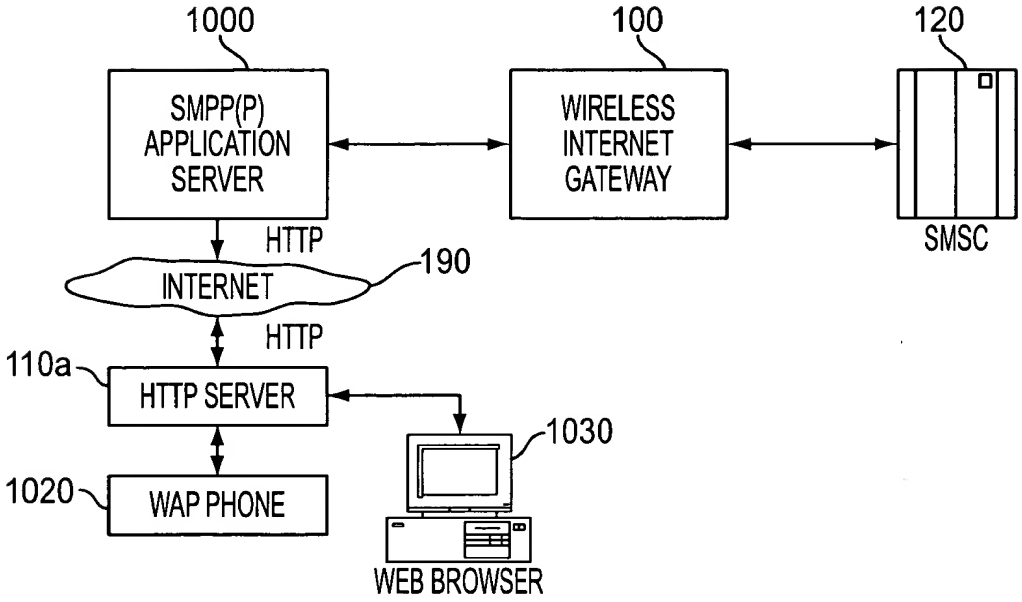
1000
SMPP(P)
APPLICATION
SERVER
100
WIRELESS
INTERNET
GATEWAY
120
SMSC
HTTP
INTERNET
190
HTTP
110a
HTTP SERVER
1030
1020
WAP PHONE
WEB BROWSER

FIG. 5

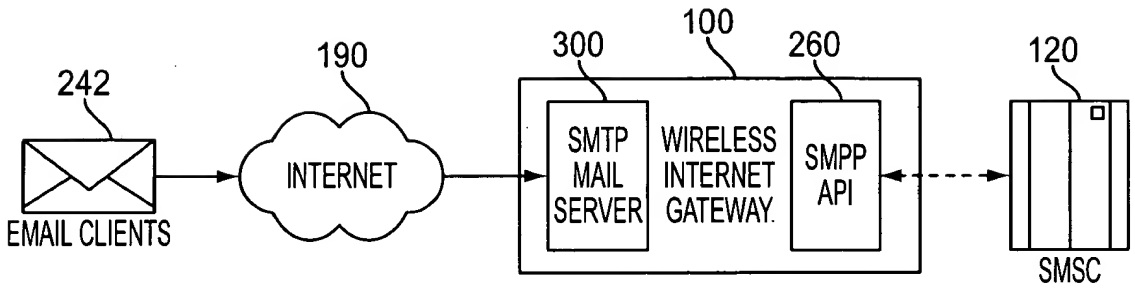
242
190
300
100
260
120
EMAIL CLIENTS
INTERNET
SMTP MAIL SERVER
WIRELESS INTERNET GATEWAY
SMPP API
SMSC

FIG. 6

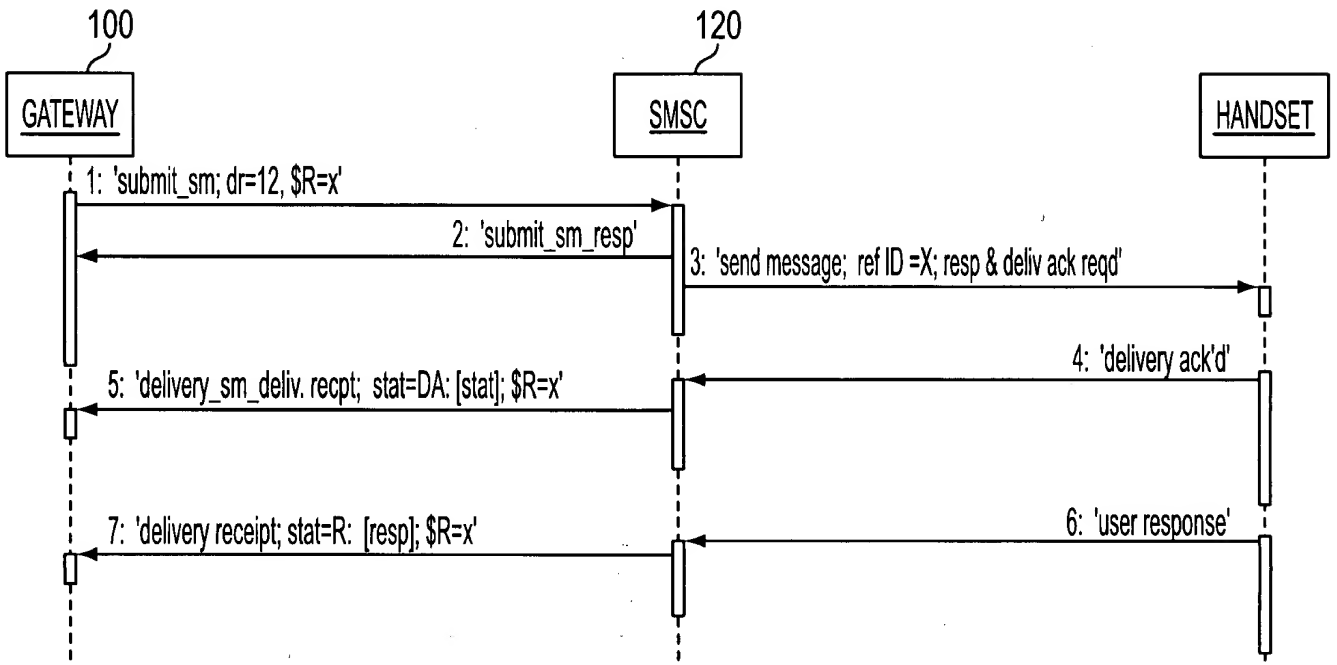
100
120
GATEWAY
SMSC
HANDSET
1: 'submit_sm; dr=12, $R=x'
2: 'submit_sm_resp'
3: 'send message; ref ID =X; resp & deliv ack reqd'
4: 'delivery ack'd'
5: 'delivery_sm_deliv. recpt; stat=DA: [stat]; $R=x'
6: 'user response'
7: 'delivery receipt; stat=R: [resp]; $R=x'

FIG. 7A

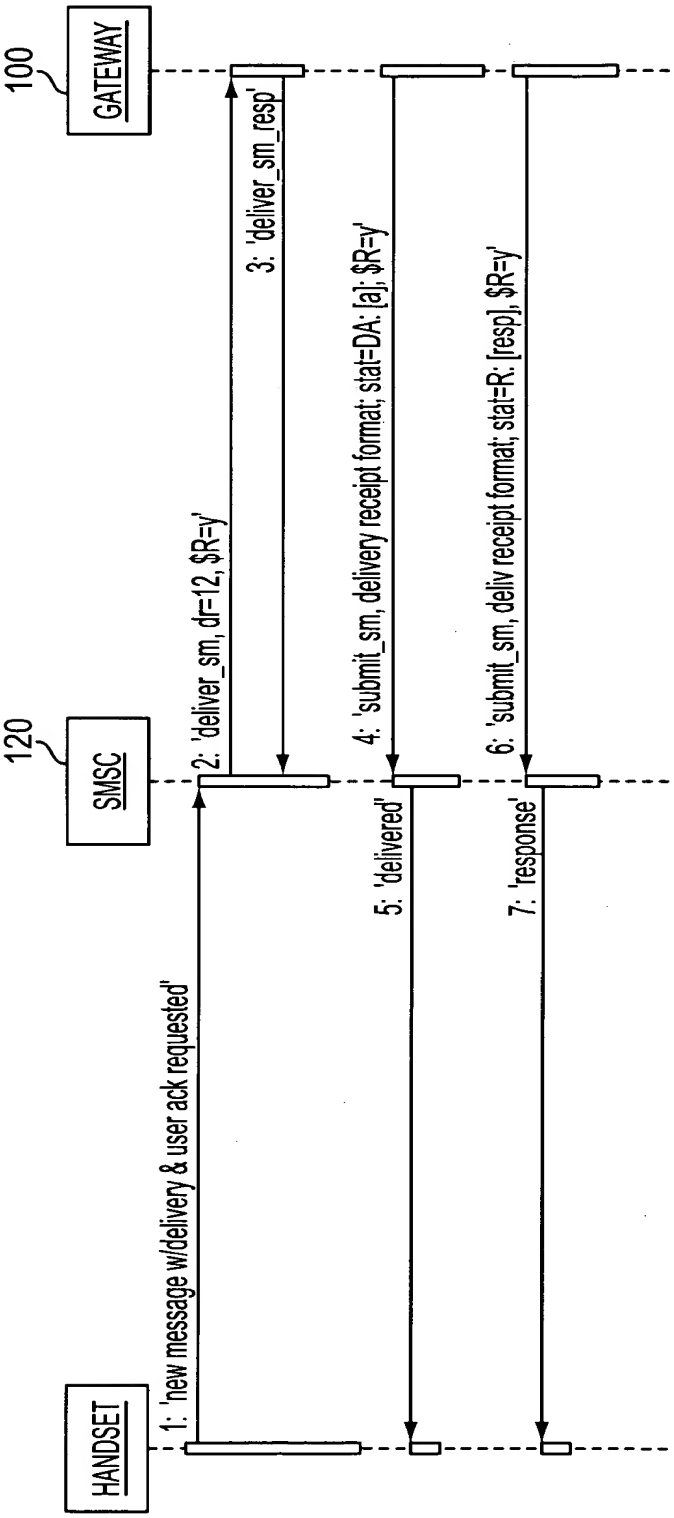
100
GATEWAY
120
SMSC
HANDSET
1: 'new message w/delivery & user ack requested'
2: 'deliver_sm, dr=12, $R=y'
3: 'deliver_sm_resp'
4: 'submit_sm, delivery receipt format; stat=DA: [a]; $R=y'
5: 'delivered'
6: 'submit_sm, deliv receipt format; stat=R: [resp], $R=y'
7: 'response'

FIG. 7B

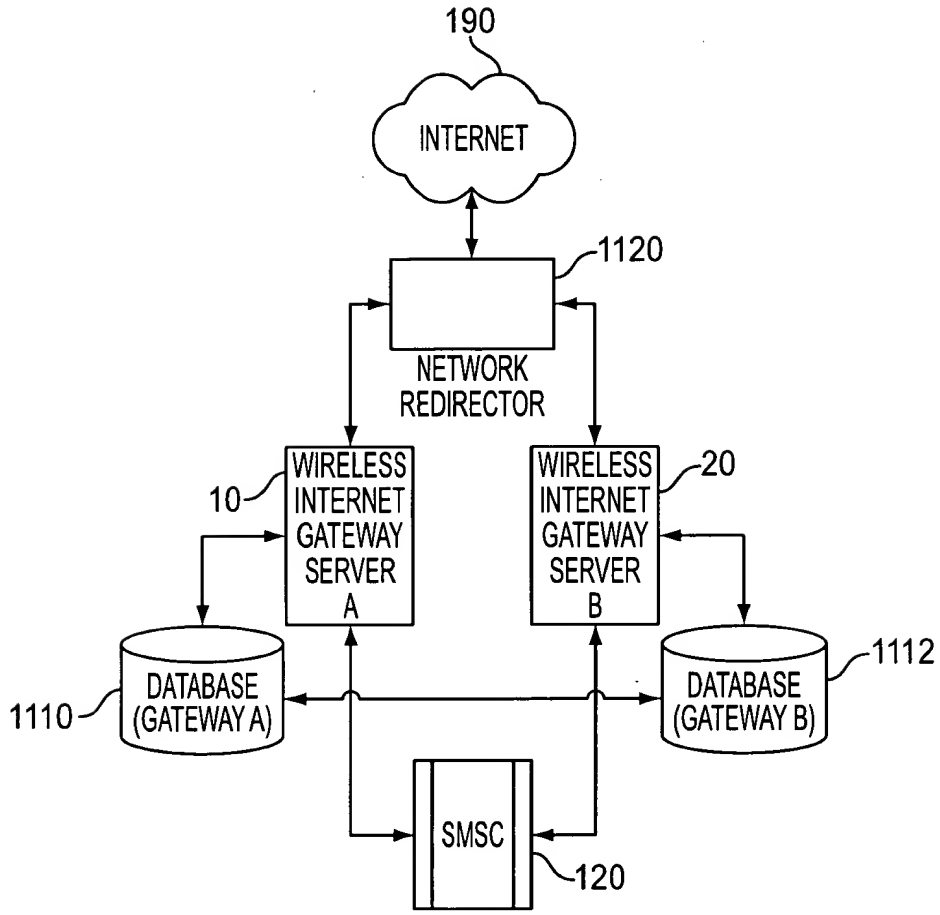
190
INTERNET
1120
NETWORK
REDIRECTOR
10
WIRELESS
INTERNET
GATEWAY
SERVER
A
WIRELESS
INTERNET
GATEWAY
SERVER
B
20
1110
DATABASE
(GATEWAY A)
DATABASE
(GATEWAY B)
1112
SMSC
120

FIG. 8

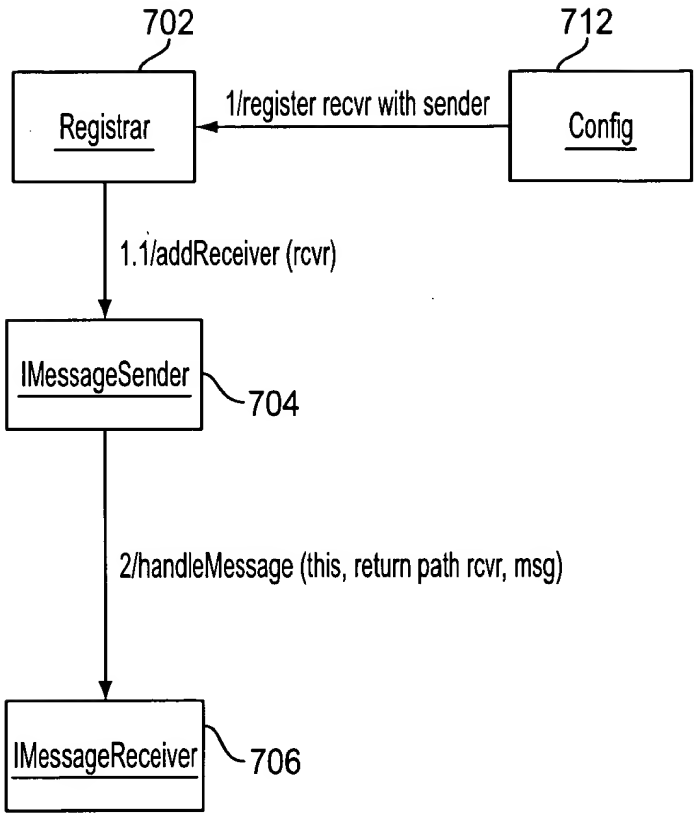
702
712
Registrar
1/register recvr with sender
Config
1.1/addReceiver (rcvr)
IMessageSender
704
2/handleMessage (this, return path rcvr, msg)
IMessageReceiver
706

FIG. 9A

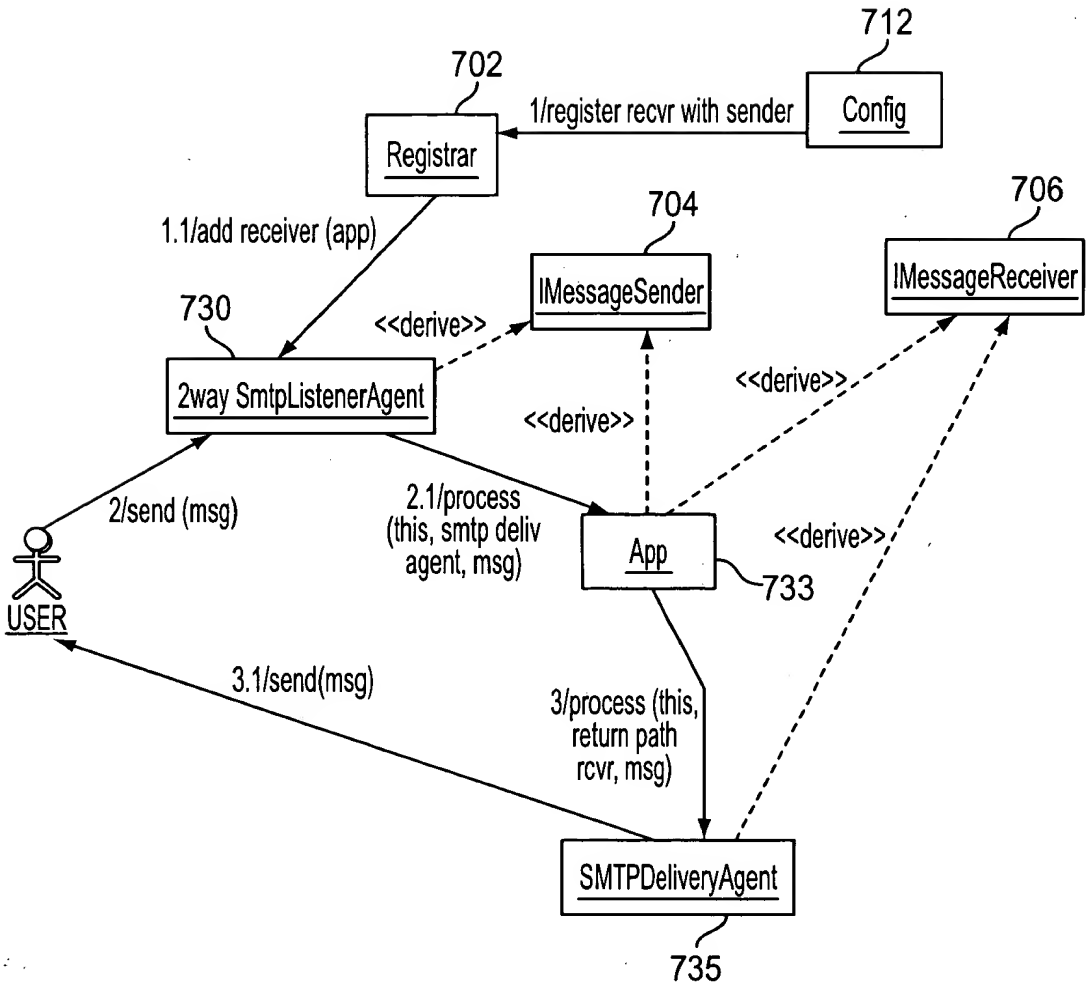
712
Config
702
Registrar
1/register recvr with sender
1.1/add receiver (app)
704
IMessageSender
706
IMessageReceiver
730
2way SmtpListenerAgent
<<derive>>
<<derive>>
<<derive>>
<<derive>>
2/send (msg)
2.1/process (this, smtp deliv agent, msg)
App
733
USER
3.1/send(msg)
3/process (this, return path rcvr, msg)
SMTPDeliveryAgent
735

FIG. 9B

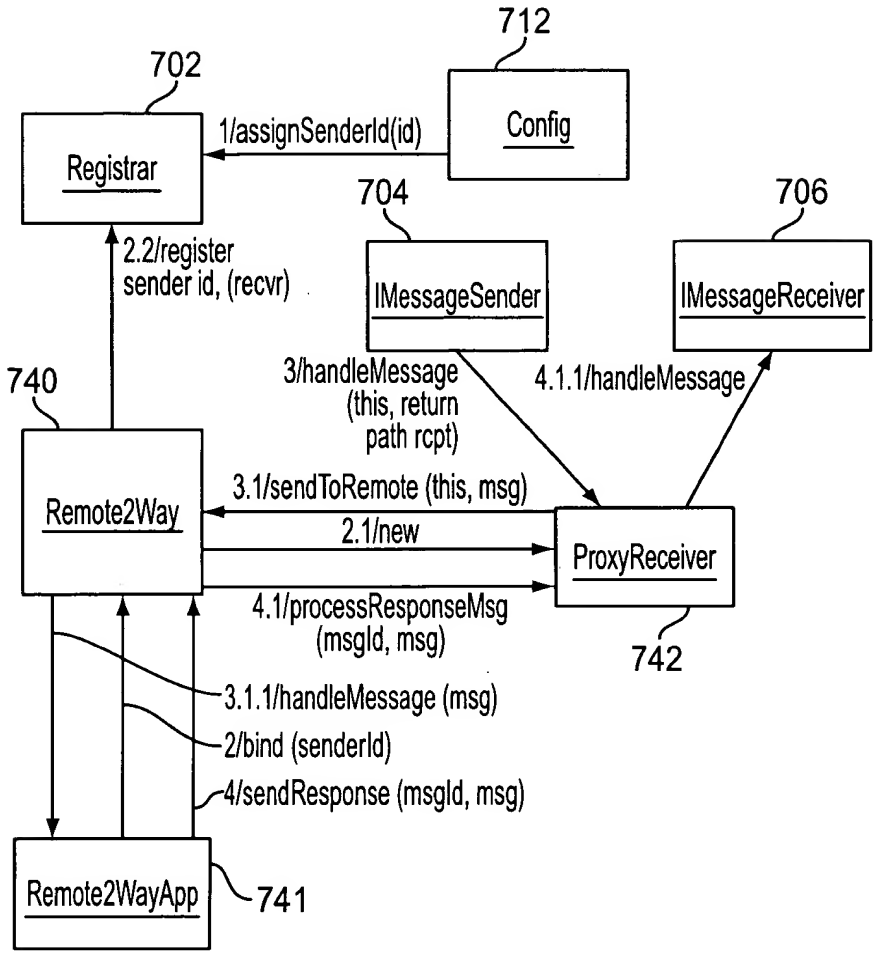
712
702
Config
1/assignSenderId(id)
Registrar
704
706
2.2/register
sender id, (recvr)
IMessageSender
IMessageReceiver
3/handleMessage
(this, return
path rcpt)
4.1.1/handleMessage
740
Remote2Way
3.1/sendToRemote (this, msg)
2.1/new
ProxyReceiver
4.1/processResponseMsg
(msgId, msg)
742
3.1.1/handleMessage (msg)
2/bind (senderId)
4/sendResponse (msgId, msg)
Remote2WayApp
741

FIG. 9C

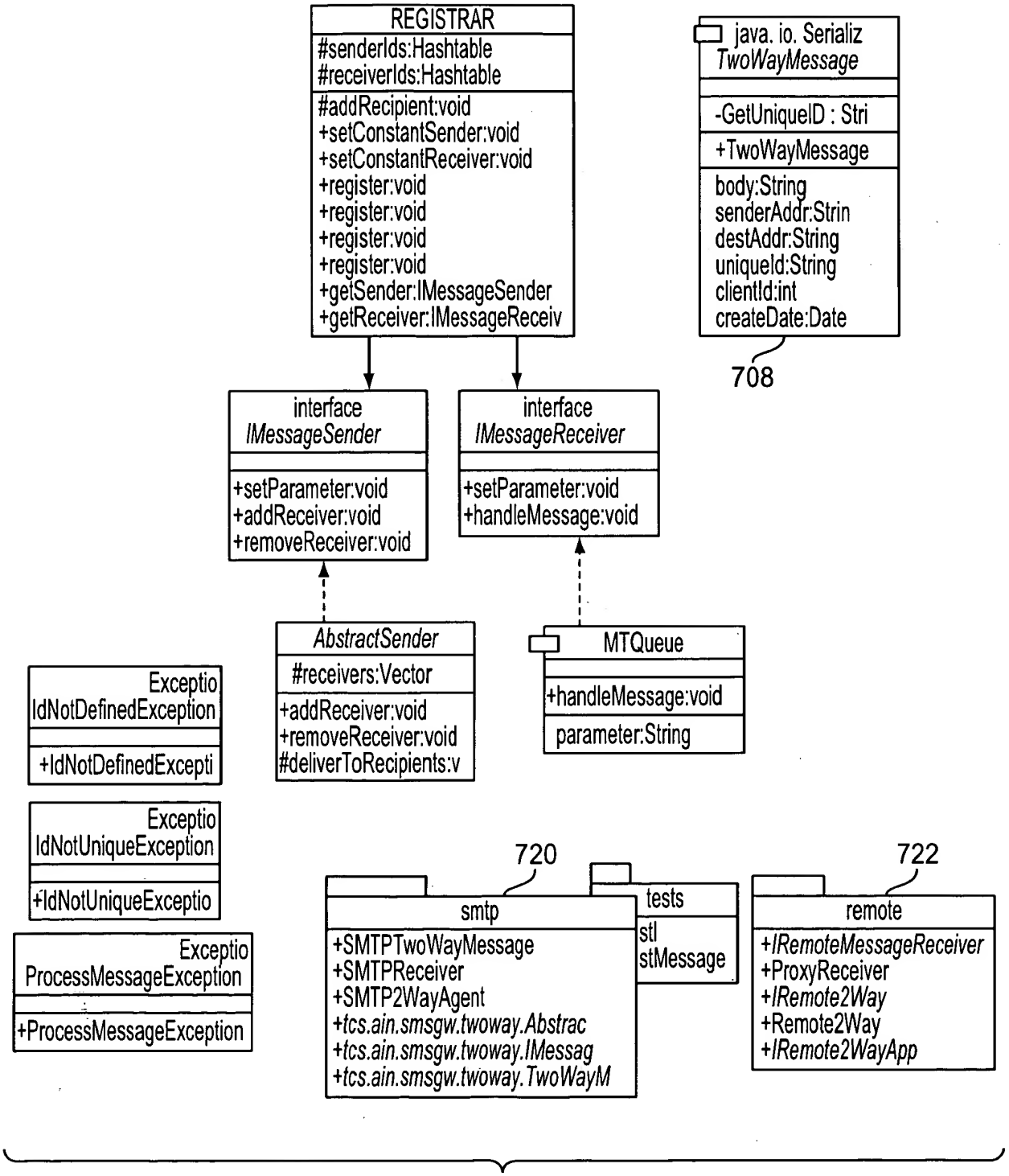
REGISTRAR
#senderIds:Hashtable
#receiverIds:Hashtable
#addRecipient:void
+setConstantSender:void
+setConstantReceiver:void
+register:void
+register:void
+register:void
+register:void
+getSender:IMessageSender
+getReceiver:IMessageReceiv
java. io. Serializ
TwoWayMessage
-GetUniqueID : Stri
+TwoWayMessage
body:String
senderAddr:Strin
destAddr:String
uniqueId:String
clientId:int
createDate:Date
708
interface
IMessageSender
+setParameter:void
+addReceiver:void
+removeReceiver:void
interface
IMessageReceiver
+setParameter:void
+handleMessage:void
AbstractSender
#receivers:Vector
+addReceiver:void
+removeReceiver:void
#deliverToRecipients:v
MTQueue
+handleMessage:void
parameter:String
Exceptio
IdNotDefinedException
+IdNotDefinedExcepti
Exceptio
IdNotUniqueException
+IdNotUniqueExceptio
Exceptio
ProcessMessageException
+ProcessMessageException
720
smtp
+SMTPTwoWayMessage
+SMTPReceiver
+SMTP2WayAgent
+tcs.ain.smsgw.twoway.Abstrac
+tcs.ain.smsgw.twoway.IMessag
+tcs.ain.smsgw.twoway.TwoWayM
tests
stl
stMessage
722
remote
+IRemoteMessageReceiver
+ProxyReceiver
+IRemote2Way
+Remote2Way
+IRemote2WayApp

FIG. 10A

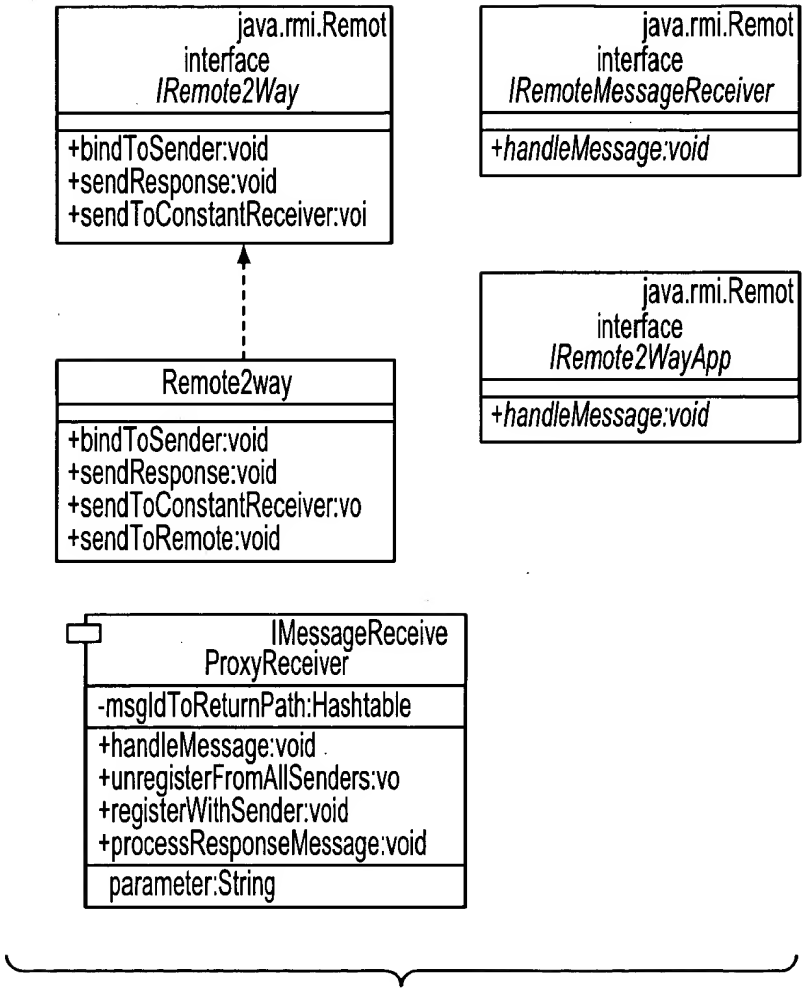
java.rmi.Remot
interface
IRemote2Way
+bindToSender:void
+sendResponse:void
+sendToConstantReceiver:voi
java.rmi.Remot
interface
IRemoteMessageReceiver
+handleMessage:void
java.rmi.Remot
interface
IRemote2WayApp
+handleMessage:void
Remote2way
+bindToSender:void
+sendResponse:void
+sendToConstantReceiver:vo
+sendToRemote:void
IMessageReceive
ProxyReceiver
-msgIdToReturnPath:Hashtable
+handleMessage:void
+unregisterFromAllSenders:vo
+registerWithSender:void
+processResponseMessage:void
parameter:String

FIG. 10B

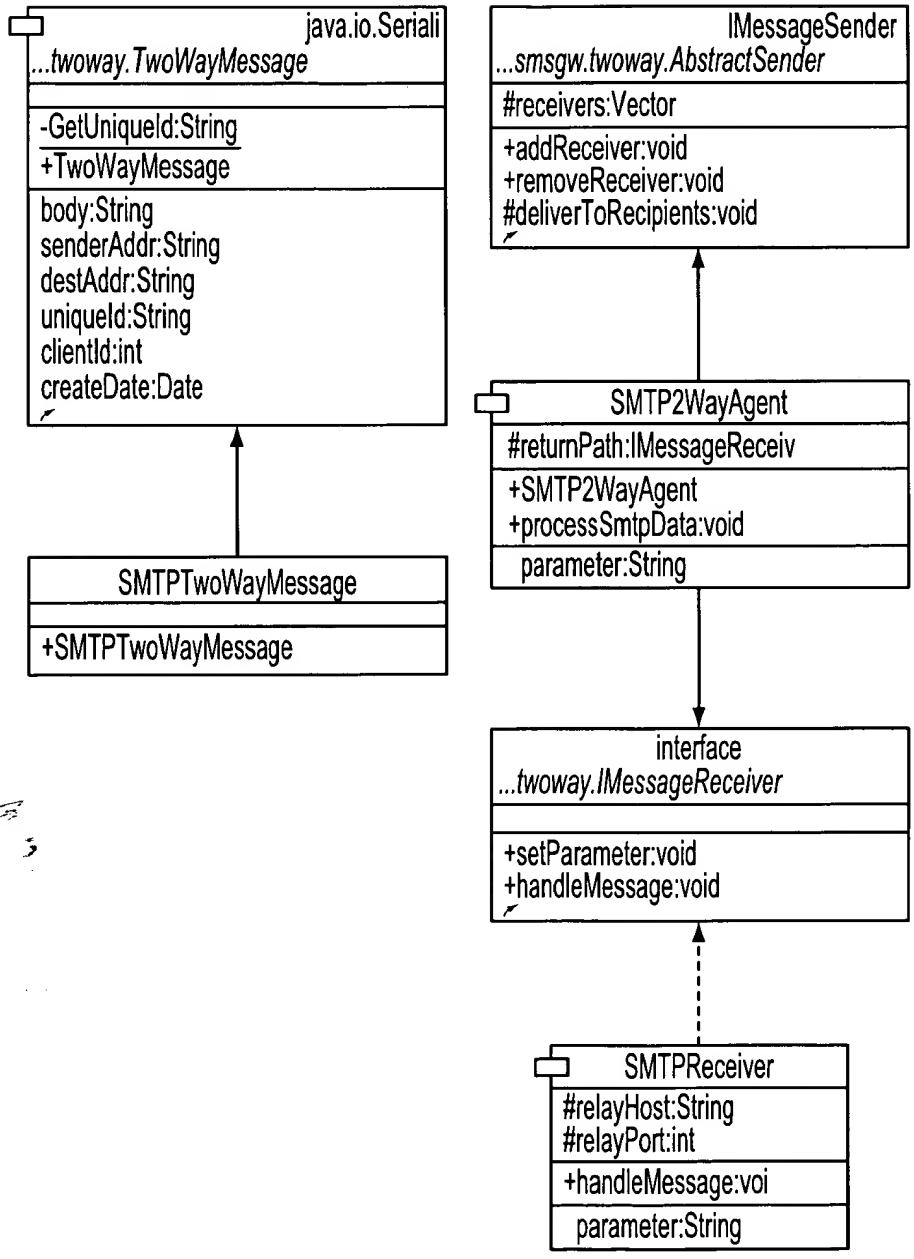
java.io.Seriali
...twoway.TwoWayMessage
-GetUniqueId:String
+TwoWayMessage
body:String
senderAddr:String
destAddr:String
uniqueId:String
clientId:int
createDate:Date
SMTPTwoWayMessage
+SMTPTwoWayMessage
IMessageSender
...smsgw.twoway.AbstractSender
#receivers:Vector
+addReceiver:void
+removeReceiver:void
#deliverToRecipients:void
SMTP2WayAgent
#returnPath:IMessageReceiv
+SMTP2WayAgent
+processSmtpData:void
parameter:String
interface
...twoway.IMessageReceiver
+setParameter:void
+handleMessage:void
SMTPReceiver
#relayHost:String
#relayPort:int
+handleMessage:voi
parameter:String

FIG. 10C

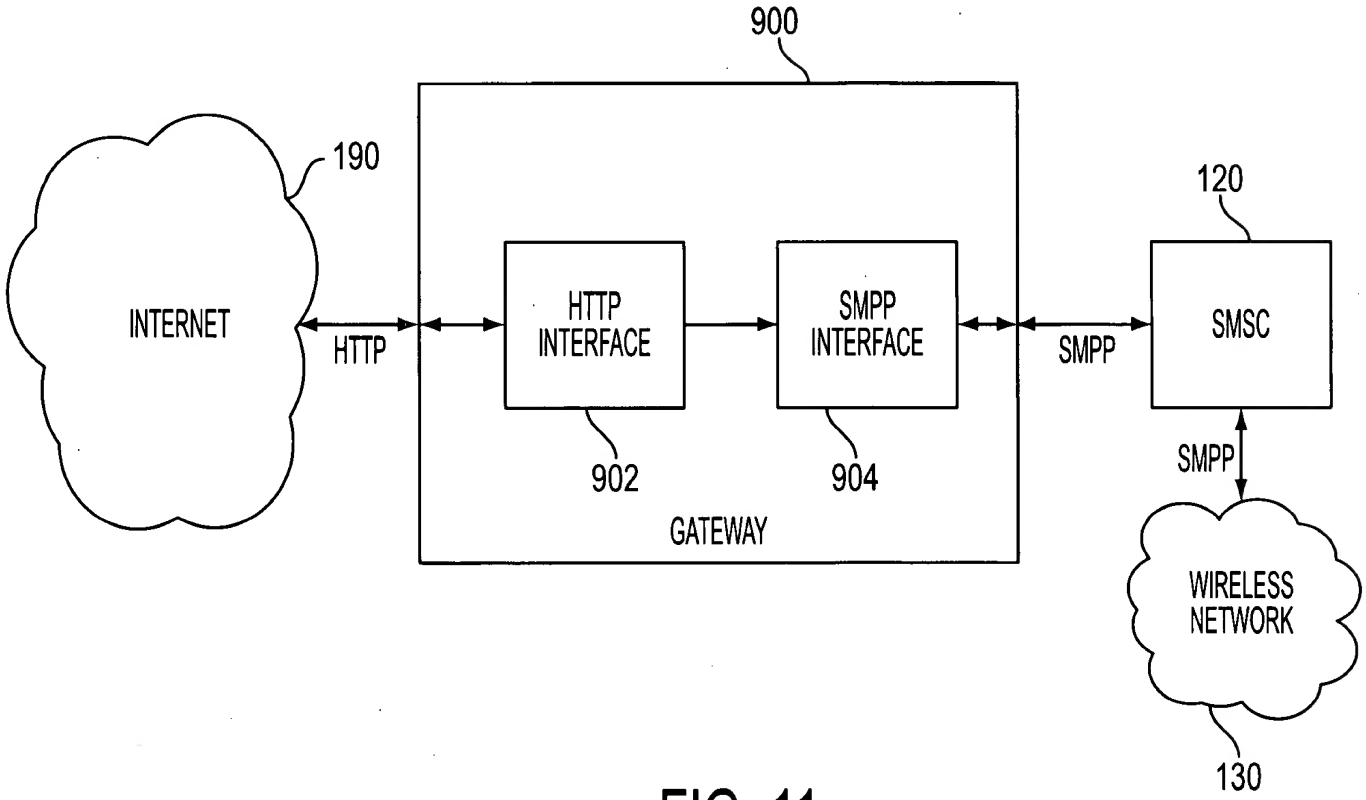

FIG. 11
(PRIOR ART)